DOCUMENT RESUME

ED 267 218 CE 043 737

TITLE	General Building Trades: Scope and Sequence.
INSTITUTION	Nashville - Davidson County Metropolitan Public Schools, Tenn.
SPONS AGENCY	Tennessee State Dept. of Education, Nashville.
PUB DATE	[84]
NOTE	25p.; For related documents, see CE 043 708-742.
PUB TYPE	Guides - Classroom Use - Guides (For Teachers) (052)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Articulation (Education); *Building Trades; Cabinetmaking; Carpentry; *Construction (Process); *Course Content; Course Descriptions; Course Objectives; Educational Resources; Electricians; Masonry; Painting (Industrial Arts); Plumbing; Roofing; Secondary Education; *Trade and Industrial Education; Vocational Education

ABSTRACT

Intended for use by all general building trades instructors in the Metropolitan Nashville Public Schools, this guide provides a sequential listing of course content and scope. A course description provides a brief overview of the content of the courses offered in the general building trades program. General course objectives are then listed. Outlines of the course content are presented for these courses: general building trades I, II, and III. Suggested time and specific objectives are provided for each major topic. A listing of resource materials, which includes textbooks, curriculum guides, and filmstrip and cassette sets, is appended. (YLB)

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GENERAL BUILDING TRADES

SCOPE AND SEQUENCE

VOCATIONAL EDUCATION

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Metropolitan Public Schools

Nashville Davidson County, Tennessee

Charles O. Frazier, Director

FOREWORD

This scope and sequence guide, developed for the General Building Trades Vocational Education program, represents an initial step in the development of a systemwide articulated curriculum sequence for all vocational programs within the Metropolitan Nashville Public School System. It is a direct result of needs expressed by teachers, parents, and the business community for sequential structure within the vocational education curriculum. An articulated vocational curriculum allows a student to move from one level of instruction to the next without repeating learning tasks already mastered, and without experiencing gaps in the presentation of relevant instructional material.

A goal of this curriculum effort is to provide teachers a usable guide based on input from the teachers. The initial step was an identification of course content, with all teachers having an opportunity to contribute. What follows is a publication using the teachers' contributions: a sequential listing of objectives and skills for each program offering.

This guide does not include all specific resource materials that may be used to assist students in acquiring minimum competencies. It is to serve as a guide for the sequence of course content and scope of what is to be taught. This guide content is extremely important and its use is encouraged. The suggested competencies and resource materials allow instructors an opportunity to be creative and resourceful in meeting the needs of individual programs and students.

ACKNOWLEDGEMENT

Recognition and appreciation are extended to the following who worked so diligently in the development of these materials:

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INTRODUCTION

This guide was prepared by General Building Trades teachers. The guide is intended to serve as a framework for the General Building Trades instructional programs in the Metropolitan Public Schools. It is suggested that any rearranging of unit placement be confined to the semester in which it is listed. Safety shall be taught when and as deemed necessary be each instructor. Students will have an opportunity to participate and compete in VICA activities.

COURSE DESCRIPTION

General Building Trades I combines elements of building trades necessary to build a residence. Instructional units include the following: orientation, safety, introduction to hand and power tools, materials, plans and specifications, codes and zoning, math blueprint reading, carpentry and masonry. To some extent and as time permits, other phases of construction work shall be included.

The second and third course in General Building Trades combines elements of trowel trades, carpentry, electrical wiring, plumbing, painting and decorating to give the students basic skills in and an overview of the construction trades. Students develop skills in blueprint reading and shop sketching, building layout, foundation form building, brick and block laying, cement work, floor, roof, finish carpentry and cabinet making. They learn to wire buildings in accordance with applicable regulations. The design and function of plumbing systems, including hot and cold water and waste piping components are also taught.

GENERAL COURSE OBJECTIVES

1. To introduce students to the building industry
2. To provide experiences for students similar to those of the construction industry
3. To help students become aware of the trades available to them in the community
4. To provide a safe working invironment for students and instill in them safe work habits and attitudes
5. To teach the importance of promptness, loyalty and dedication to work
6. To help students find the trade in which they are most likely to succeed
7. To familiarize the students with basic materials used in residential home construction
8. To teach students to read prints and technical material necessary to build a home
9. To teach students to do acceptable work in building construction based on recognized building codes
10. To help students gain competency in the skillful and technical use of tools, materials and equipment
11. To encourage students to keep abreast of current trends, techniques and practices in the construction industry

COURSE CONTENT FOR GENERAL BUILDING TRADES I

(First Semester)

I. Orientation (1 week)

Specific objectives:

To become familiar with classroom expectations
To become acquainted with the building trades industry and job opportunities

A. Understands rules and regulations

B. Understands grading system

C. Becomes oriented to the building trades industry

II. Hand tools (1 week)

Specific objectives:

To become familiar with the hand tools used in the industry
To learn the safe use of hand tools
To experience the usefulness of hand tools

A. Uses measuring and layout tools

B. Uses cutting tools

C. Learns safety rules and procedures

III. Power tools (2 weeks)

Specific objectives:

To become acquainted with the power tools used in building trades
To learn safe use of power tools
To experience the use of power tools

A. Learns to use tools in the trade industry

B. Uses stationary machines

C. Learns safety rules and procedures

IV. **Building materials (2 weeks)**

Specific objective:

To become aware of the use and care of various materials

A. Understands lumber grading and sizing

B. Analyzes masonry materials

1. Brick
2. Concrete blocks
3. Mortar
4. Concrete

C. Understands miscellaneous materials

V. **Legal documents (1 week)**

Specific objectives:

To learn how building contracts are created
To become familiar with the documents required to constitute a contract

A. Understands codes

B. Understands zoning policies

C. Analyzes plans

D. Analyzes specifications of plans

E. Analyzes contracts use

VI. **Footings and foundations (2 weeks)**

Specific objectives:

To learn the importance of job responsibilities
To become familiar with the types of footings and foundations
To learn the importance of job safety

A. Understands job leader role

B. Understands batter board use

VI. **Footings and foundations continued:**

C. Understands excavation procedures

D. Understands concrete footings requirements

VII. **Floor framing (3 weeks)**

Specific objectives:

To learn the types, names and parts of floor framing
To learn floor frame layout
To learn the importance of safety

A. Analyzes shapes and designs of structures

B. Understands girder and beam construction methods

C. Understands post, column and pier supports

D. Understands framing over girders procedures

E. Understands joists, sills and headers location

F. Analyzes joist and bridging layout

G. Frames openings

H. Estimates construction costs

VIII. **Walls and ceilings (3 weeks)**

Specific objectives:

To learn the parts of walls and ceilings
To learn layout techniques
To learn how to estimate the amount of material needed
To learn the importance of safety

A. Identifies parts

B. Understands corner construction

C. Develops layout methods

D. Understands frame openings procedures

E. Understands partition construction

VIII. **Walls and ceilings continued:**

F. Understands assembly and erection methods

G. Analyzes bracing methods

H. Analyzes blocking for plumbing fixtures

I. Understands wall covering materials

J. Analyzes ceiling joist and arrangement

K. Uses estimating processes

L. Understands safety procedures

IX. **Roof framing (3 weeks)**

Specific objectives:

To learn roof design
To learn the parts of a roof frame
To learn the fundamentals of rafter layout
To learn the layout of roofs
To learn the importance of safety

A. Analyzes design or types of roofs

B. Identifies parts of roof

C. Understands layout terms and principles

D. Makes interpretation of plans

E. Understands and uses a steel square

F. Develops a layout for a common rafter

G. Erects a simple gable roof

H. Understands gable end construction

I. Identifies hip, valley and jack rafters

J. Understands trusses

K. Classifies roof sheathing

IX. **Roof framing continued:**

L. Develops estimating procedures

M. Practices safety procedures

N. Classifies roofing materials

COURSE CONTENT FOR GENERAL BUILDING TRADES I

(Second Semester)

I. Windows (2 weeks)

Specific objectives:

To describe the various functions and types of windows used in homes
To understand the correct way to install windows

A. Analyzes sash and frame materials

B. Analyzes pane materials

C. Analyzes types of openings

D. Classifies awning covers

E. Understands jalousier design

F. Understands multiple use of windows

G. Understands fixed windows

H. Analyzes insulation procedures

I. Analyzes screen materials

J. Analyzes parts of windows

K. Makes drawings of windows

II. Doors (2 weeks)

Specific objective:

To learn the proper installation, function and types of doors used in home construction

A. Analyzes exterior doors

B. Analyzes interior doors

C. Interprets hardware selection

III. **Interior trim (2 weeks)**

Specific objective:

To learn the proper methods of completing the interior of a house

A. Understands types of joints

B. Analyzes fasteners in construction

IV. **Exterior walls and trim (3 weeks)**

Specific objectives:

To learn the proper method of completing the exterior of a house
To learn the identity and proper use of supplies and equipment used in completing the exterior of a house

A. Analyzes cornice designs

B. Understands cornice and eave framing

C. Identifies sheathing and flashing materials

D. Analyzes wall covers

V. **Insulation (1 week)**

Specific objective:

To become acquainted with the types of insulation used in homes

A. Understands types

B. Analyzes installation procedures

VI. **Interior walls and ceilings (3 weeks)**

Specific objective:

To become acquainted with the different materials used for completing interior walls and ceilings

A. Understands plaster use

B. Understands dry wall use

C. Understands plywood paneling use

VI. Interior walls and ceilings continued:

D. Understands pressed wood and fiberboards use

E. Understands ceiling tile use

VII. Floors (2 weeks)

Specific objectives:

To become acquainted with the different materials used for floors
To demonstrate the proper procedures used in completing floors

A. Identifies wood flooring

1. Types

2. Installation

B. Identifies resilient floor coverings

1. Types

2. Installation

VIII. Stair construction (2 weeks)

Specific objectives:

To illustrate the different types of stairs
To construct stairs

A. Identifies types of stairs

B. Analyzes parts of stairs

C. Computes the calculation of spaces

D. Develops stringer layout

IX. Chimney and fireplaces (1 week)

Specific objectives:

To learn the different materials used in constructing a fireplace and chimney
To learn the proper procedures for constructing a fireplace and chimney

A. Identifies types of fireplaces

IX. **Chimney and fireplaces continued:**

B. Analyzes materials in fireplace construction

C. Determines construction practices

COURSE CONTENT FOR GENERAL BUILDING TRADES II

(First Semester)

I. Review of General Building Trades I (2 weeks)

Specific objectives:

To recognize how the economy affects the construction industry
To describe the various occupations in the construction industry

A. Interprets careers in construction

B. Understands VICA organization concepts

C. Analyzes the planning of a house

D. Reads blueprints

E. Understands safety practices

II. Foundations (3 weeks)

Specific objectives:

To understand the importance and function of footings
To construct a concrete block foundation

A. Understands the foundation in relation to the building site

B. Understands pouring concrete footings

C. Understands poured concrete foundation walls

D. Creates concrete block foundation walls

E. Understands concrete flatwork

III. Framing (7 weeks)

Specific objectives:

To identify and describe the function of floor framing members
To understand the layout and construction of wall framing

A. Understands framing methods

III. **Framing continued:**

B. Constructs floor framing

C. Constructs wall framing

D. Installs wall sheathing

E. Constructs ceiling framing

F. Constructs roof framing

G. Constructs framing with common rafters

H. Constructs hip and valley rafters

I. Constructs jack rafters

J. Designs layout and erection of the roof frame

K. Designs and constructs roof trusses

L. Installs roof sheathing

M. Installs roof covering

IV. **Completing the exterior (6 weeks)**

Specific objectives:

To describe the various functions of siding or masonry veneer, doors and windows and exterior trim
To compare a variety of materials used to finish residential building exteriors

A. Installs roof trim

B. Installs windows

C. Installs exterior doors and frames

D. Installs exterior wall covering

COURSE CONTENT FOR GENERAL BUILDING TRADES II

(Second Semester)

I. Plumbing (5 weeks)

Specific objectives:

To recognize plumbing symbols and abbreviations used in architectural drawings
To prepare piping sketches in two and three dimensions
To describe and demonstrate proper installation procedures for plumbing fixtures

A. Uses plumbing tools

B. Uses mathematics for plumbers

C. Classifies piping materials and fittings

D. Learns the use of valves, faucets and meters

E. Understands heating and cooling water systems

F. Learns blueprint reading and sketching

G. Designs plumbing systems

H. Prepares pipe and fitting installation

I. Understands building and plumbing codes

J. Understands plumbing fixture installation

II. Electrical wiring (5 weeks)

Specific objectives:

To identify simple electrical circuits
To design a simple electrical system

A. Uses electical tools and equipment

B. Designs basic wiring procedures

C. Recognizes types of wiring

II. **Electrical wiring continued:**

D. Selects electrical materials

E. Designs an electrical system

F. Installs rough-in wiring

G. Determines service requirements

H. Installs switches and receptacles

I. Installs and mounts fixtures

III. **Completing the interior (6 weeks)**

Specific objectives:

To use common interior finishing materials
To consider the factors in finishing the interior of a residence

A. Understands thermal insulation and vapor barriers

B. Chooses interior wall and ceiling finish

C. Chooses and finishes flooring

D. Finishes stairs

E. Designs and finishes cabinets and built-ins

F. Selects interior trim

IV. **Painting and finishing (2 weeks)**

Specific objectives:

To be able to explain the purposes of paint and clean wood finishes
To apply paint and varnish

A. Understands interior painting and finishing materials

B. Understands exterior painting and materials

COURSE CONTENT FOR GENERAL BUILDING TRADES III

(First and Second Semester)

I. Review of General Building Trades II (3 weeks)

Specific objectives:

To work safely in the area of general building trades
To discuss careers in the construction industry

A. Discerns careers in construction

B. Understands VICA organization

C. Utilizes safety practices

II. Specifications and contracts (7 weeks)

Specific objectives:

To understand the purpose and organization of construction specifications
To be able to explain the importance of construction contracts to owners, designers and contractors
To define fixed-sum contracts and cost-plus contacts

A. Participates in specification writing

B. Writes bid sheets

C. Studies contracts

III. Planning to build a house (7 weeks)

Specific objectives:

To discuss ways of obtaining housing
To demonstrate how to draw architectural plans

A. Chooses a desirable plan

B. Selects a lot

C. Reads and interprets blueprints

D. Analyzes permits

III. **Planning to build a house continued:**

E. Selects materials

F. Determines cost

IV. **Constructing the house (18 weeks)**

Specific objectives:

To be able to explain safety practices used in construction
To be able to explain steps used in the construction of a house
To do acceptable work in building construction, based on recognized building codes

A. Becomes familiar with job procedures

B. Practices safety procedures

C. Begins construction on model house

V. **Employment opportunities (1 week)**

Specific objectives:

To understand what it takes to get a job and keep it
To learn the techniques of seeking gainful employment

A. Studies employer-employee relationships

B. Analyzes available employment opportunities

RESOURCE MATERIALS

Textbooks

Decristoforo, R. J. Concrete and Masonry Techniques and Design. Reston, Virginia: Reston Publishing Company, 1975.

Feirer, J. L. and Hutchings, G. R. Carpentry and Building Construction. Peoria, Illinois: Bennett Publishing Company, 1976, 1981.

Huth, Mark. Introduction to Construction. Albany, New York: Delmar Publishers, 1980.

Kicklighter, Clois E. Modern Masonry. South Holland, Illinois: Goodheart-Wilcox Company, 1980.

Mix, Floyd M. House Wiring Simplified. South Holland, Illinois: Goodheart-Wilcox Company, 1981.

Smith, Ronald C. Principles and Practices of Light Construction. Englewood Cliffs, New Jersey: Prentice-Hall, 1970.

Curriculum Guides

V-TECS for Plumbing, Masonry and Carpentry. Trade and Industrial Education Curriculum Development Center, University of Kentucky, Lexington, Kentucky, 1975.

Audio Visual

Filmstrips & Cassettes

Masonry - DCA - 12 filmstrips, 12 cassettes

Unit I - Hand Tools and Mortar

Lesson 1 - Basic Hand Tools

Lesson 2 - Mixing Mortar by Hand

Filmstrips & Cassettes continued:

Unit I - Hand Tools and Mortar continued:

Lesson 3 - Spreading Mortar

Unit II - Brick, Part A

Lesson 1 - Laying Brick

Lesson 2 - The Rack-Back Lead

Lesson 3 - The Straight Lead

Unit III - Brick, Part B

Lesson 1 - The Corner

Lesson 2 - The Pier

Lesson 3 - Laying to the Line

Unit IV - Block

Lesson 1 - The Block Corner

Lesson 2 - The Block Pier

Lesson 3 - Laying Block to the Line

House Wiring - DCA - 9 filmstrips, 9 cassettes

Unit I — Lesson 1 - Basic Electrician Tools

Lesson 2 - Identify Electrical Fittings

Lesson 3 - Installing a Panel

Unit II— Lesson 1 - Installing Wall Receptacle Boxes

Lesson 2 - Installing Switch Boxes

Lesson 3 - Installing Ceiling Outlets

Unit III- Lesson 1 - Making a Temporary Entrance

Lesson 2 - Installing Receptacles and Switches

Filmstrips & Cassettes continued:

Unit III-continued:

Lesson 3 - Wiring a 3-way Switch

Plumbing - DCA

Basic Plumbing Skills - 3 filmstrips, 3 cassettes

Cutting and Threading Pipe - 1 filmstrip, 1 cassette

Operating Power Machines - Jim Handy - 1 filmstrip, 1 cassette

Protecting Your Eyes - Jim Handy - 1 filmstrip, 1 cassette